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EXAMINER	
FISCHER, JUSTIN R	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/926,485
Filing Date: January 25, 2002
Appellant(s): YAMAGIWA, TOSHIO

Robert Carpenter
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 4, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

(A) Listing of Prior Art of Record

US 4,286,643 CHEMIZARD 9-1989

JP 7-266454	BEERS	10-1995
US 3,042,098	REINOWSKI	7-1962
US 3,563,294	CHIEN	2-1971

(B) Brief Description of Prior Art of Record

Chemizard discloses a tire construction having a sealant containing chamber disposed between an outer liner and an inner liner, wherein said outer liner is fastened to the inner surface of the tread during vulcanization of the tire (Figure 1). Furthermore, the inner liner forms a boundary between said sealant chamber and the tire cavity or air chamber.

Beers is directed to a pneumatic tire construction in which a low modulus (highly flexible) material is used to form the inner liner in order to provide good durability and reduced cracking. It is noted that each of the inventive inner liner compositions in Table 2 has a 300% modulus between 30 and 37 kgf/cm^2.

Reinowski teaches a sealant-containing tire construction in which the inner liner is described as made of an "elastic" rubber composition, which is recognized as being consistent with a low modulus material (Column 3, Lines 60-65).

Chien teaches a sealant-containing tire construction in which the inner liner is described as "flexible", which is recognized as being consistent with a low modulus material (Column 2, Lines 35-40).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chemizard in view of Beers and optionally in view of either one of Chien or Reinowski. As best depicted in Figures 1-3, Chemizard discloses a sealant-containing tire comprising a tire body, an outer liner or partitioned lining 21 fastened to an inner surface of a tread of said tire body, and an inner liner 5 that defines an air chamber, wherein the outer liner and inner liner define an annular sealant chamber 23, 25. It is further evident from Figure 1 of Chemizard that the air chamber or tire cavity is separated from the sealant chamber by the inner liner. In regards to the outer liner being "fastened" to the inner surface of the tread, the outer liner, as well as the tread, is formed of an elastomeric mixture and upon vulcanization of the tire, it is well recognized in the tire industry that adjacent elastomeric components (inner surface of tread and outer liner- see Figure 1) become fastened to one another. It is emphasized that this "fastening" (due to vulcanization) is analogous to that disclosed by applicant (Page 2 of specification, last paragraph).

Regarding the inner liner, Chemizard only states that it is formed of a mixture having a base of airtight rubber (Column 1, Lines 52-56)- the reference is completely silent as to the 300% modulus of the inner liner. In any event, one of ordinary skill in the art at the time of the invention would have found it obvious to form the inner liner from a composition having a 300% modulus below 60 kgf/cm^2 because such compositions (those having low modulus and good flexibility) are extensively used in the tire industry and provide the benefits of good durability and resistance to cracking, as shown for

example by Beers (Abstract and Table 2). It is particularly noted that each of the inventive inner liner compositions disclosed by Beers in Table 2 (Examples 2-4, 6, and 8) have a 300% modulus that is between 3 and 3.68 MPa, which is equivalent to approximately 30-37 kgf/cm^2 and falls almost directly in the middle of the range defined by the claimed invention. Reinowski (Column 3, Lines 63-65) and Chien (Column 2, Line 37) are optionally applied since they further evidence the desirability of an "elastic" material for the inner liner or similar rubber layer in sealant-containing tire constructions.

It is emphasized that Chemizard is silent as to the inner liner composition and in view of Beers, it is recognized that the use of a low modulus, highly flexible innerliner composition provides the benefits of improved tire durability and improved crack resistance. Furthermore, the benefits of improved tire durability and improved crack resistance would be particularly desirable in a sealant-containing tire in order to avoid cracks and the resulting propagation of cracks in the innerliner upon puncture.

(10) Response to Argument

In regard to Chemizard, applicant contends that the reference nowhere teaches or suggests that the ribbon (outer liner 21) is fastened to an inner surface of a tread of the tire body. However, as set forth above and depicted in Figure 1, the outer liner is in fact fastened to the inner surface of the tread. Figure 3 and Column 2, Lines 57-62 disclose the manufacturing method in which the inner liner 5 is arranged on the building drum and subsequently covered by the sealant material and the outer liner or ribbon 21, which is formed of an elastomeric material. The remainder of the tire is then built on the assembly depicted in Figure 3- this results in the outer liner being "fastened" to the inner

surface of the tread since it is well recognized that adjacent tire components become "fastened" to one another during vulcanization or curing of the tire. It is further emphasized that the respective components in the claimed invention are "fastened" to one another in the exact same manner (Page 2, last paragraph). The language "fastened" does not appear to suggest the inclusion of an adhesive layer or additional mechanical fastening means but rather appears to define the attachment that results from curing of the tire- this is identical to the fastening that occurs in Chemizard.

Applicant further contends that the sealant chamber of Chemizard cannot be viewed as an annular chamber since the chamber is partitioned over the axial extent of said chamber. However, the claim as currently drafted does not restrict the inclusion of partitions over the axial extent of the sealant chamber. In particular, it is clearly evident from Figures 1 and 3 that the sealant chamber is entirely incorporated between the inner liner and outer liner and as such, said chamber is seen to constitute an annular sealant chamber. It is further noted that the chamber continuously extends over the circumferential extent of the tire (defines "annular" chamber").

With respect to Beers, Reinowski, and Chien, applicant merely argues that the respective references do not disclose a pneumatic tire construction incorporating each of the claimed limitations (sealant chamber disposed between inner and outer liner and an inner linier having the claimed modulus). However, as detailed above, Beers recognizes the use of materials having a 300% modulus below 60 kgf/cm^2 in order to reduce the occurrence of cracks and ultimately improve tire durability. Furthermore, Reinowski and Chien, which are specifically directed to sealant-containing tires, suggest

the use of "elastic" and "flexible" layers for the inner liner and similar inner rubber layers- these terms are consistent with low modulus (highly flexible) materials and thus further evidence the common use of low modulus materials for the inner liner in a variety of tire constructions.

In summary, Chemizard substantially teaches the sealant-containing tire of the claimed invention, including a sealant chamber arranged between an inner liner and an outer liner, wherein said outer liner is attached or fastened to the inner surface of the tread during vulcanization (analogous to the method of the claimed invention). As to the modulus of the inner liner, it is extremely well known to form the inner liner from a low modulus material (less than 60 kgf/cm^2) in order to reduce cracks and improve tire durability, as shown for example by Beers, Reinowski, and Chien, it being noted that Reinowski and Chien are specific to sealant-containing tires.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Justin Fischer
February 9, 2005

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